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TITLE

Coffee grinder with coffee bean container

CROSS REFERENCE APPLICATIONS

This application claims priority from German application no. 203 00 933.9 filed Jan. 22, 2003.

FIELD OF INVENTION

The present invention relates to a coffee grinder with a coffee bean container divided to form two compartments, with an output shaft at the bottom common to both compartments. A grinding mill is placed beneath the output shaft. A closure element for the optional closing of the output of at least one of the compartments is provided. The invention further relates to an automatic coffee maker with a coffee grinder with a coffee bean container with a bottom-side output shaft and with the grinding mill disposed beneath the output shaft.

BACKGROUND OF THE INVENTION

DE 196 06 076 A1 discloses a coffee grinder comprising a coffee bean container with a bottom-side output shaft. The output shaft of the coffee bean container terminates in the input of a grinding mill. The coffee bean container itself is divided into two compartments, such that two different coffee varieties can be stored in it. In the lower region of the coffee bean container a guide cone is disposed, which serves for the lateral supply of the coffee beans into the output shaft. The coffee bean container also

1 has a closure element, which is rotatably supported and
2 which extends through the coffee bean container. The
3 closure element is structured like a cup open toward the
4 bottom. A shaft with a top-side knob is disposed at the top
5 side of the cup. The shaft itself is supported in a tubular
6 body extending through the coffee bean container. The
7 closure element is partially open circumferentially. The
8 closure element can be brought with its remaining sections
9 in front of the lower output opening of a compartment in
10 order to fill coffee beans optionally from the one
11 compartment or coffee beans from the other compartment into
12 the output shaft and to supply them to the grinding mill.
13 Consequently, in this prior known coffee grinder, coffee
14 beans of different varieties can be ground without first
15 having to empty the coffee bean container.

16 Although in principle the functionality of this coffee
17 grinder is given in the described manner, disadvantages can
18 be encountered in handling the coffee grinder. For example,
19 beans can block a rotational movement of the closure element
20 so that an actuation of the closure element by turning the
21 knob is only possible, if at all, by exerting a not
22 inconsiderable force. Further, the structuring of the
23 coffee bean container, and especially its cover, is
24 restricted, since it is necessary to ensure in every case
25 that the actuation members of the closure element - shaft
26 and knob - are in their specified position. Consequently,
27 the realization of a hinged lid is hardly possible.

28 Automatic coffee makers or fully automatic coffee
29 makers include a coffee bean container for storing coffee
30 beans. In such automatic coffee makers with each request
31 for coffee, freshly ground coffee is used for the

1 preparation of coffee. A grinding mill associated with the
2 automatic coffee maker is responsible for making available
3 the particular required quantity of ground coffee. The
4 coffee bean container has a receptacle with an output shaft
5 placed onto the input of the grinding mill. As a rule, the
6 output shaft of the receptacle carries a guide cone, in
7 order for the coffee beans to be supplied to the grinding
8 mill. The receptacle is open at the bottom.

9 The coffee bean container is secured on the housing of
10 the automatic coffee maker by means of a coupling ring,
11 which can be secured in position on an appropriately
12 conceptualized counterpieces, for example with a bayonet
13 type lock.

14 The coffee bean container of such automatic coffee
15 makers includes a container for receiving the coffee beans
16 and a shaft disposed laterally with respect to it for
17 supplying already ground coffee past the grinding mill, in
18 order for it to be poured directly into the brewing chamber.

19 However, there is a wish to having available a coffee
20 bean container with such automatic coffee makers that can
21 store at least two different varieties of coffee beans.

22 Building on this discussed prior art, the invention
23 addresses the problem of further developing a coffee grinder
24 as well as an automatic coffee maker equipped therewith to
25 the extent that the disadvantages listed in connection with
26 the coffee grinder described in the introduction are at
27 least to the greatest possible extent avoided.

28 This problem is solved when the closure element forms
29 with the grinding mill a concrete unit and the coffee bean
30 container is disposed rotatably relative to the unit formed
31 of the closure element and the grinding mill.

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SUMMARY OF THE INVENTION

The primary aspect of the present invention is to provide a coffee bean container for a coffee grinder and/or an automatic coffee machine which can have more than one section for storing different varieties of coffee. The coffee bean container can be rotated to change which type bean is supplied to the mill for grinding.

Other aspects of this invention will appear from the following description and appended claims, reference being made to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

According to the invention the coffee bean container is divided in to at least two compartments, with the compartments of the coffee bean container terminating in the output shaft. The automatic coffee maker has a closure element for the optional closing of the output of at least one compartment. The closure element forms with the grinding mill a concrete unit and the coffee bean container is disposed rotatably relative to the unit formed of the closure element and the grinding mill.

In such a coffee grinder the closure element is basically associated with the grinding mill. For this reason the coffee bean container itself does not need to include or support movable parts for driving the closure element. The closure element is placed on the grinding mill stationary against a rotational movement of the coffee bean container. In contrast, the coffee bean container itself is rotatably supported relative to the grinding mill between at least two end positions. The closure element partially

1 covers the input of the grinding mill. The particular
2 opening of a compartment for delivering coffee beans
3 corresponds substantially to the contour of the space left
4 free by the closure element.

5 Consequently by the rotation of the coffee bean
6 container about its axis, the output opening of a
7 compartment with the desired coffee bean variety can be
8 brought into a disposition flush with the space not covered
9 by the closure element, such that the coffee beans in this
10 compartment can be supplied to the grinding mill. Of
11 special advantage in this coffee grinder is that a change of
12 variety is brought about by rotation of the coffee bean
13 container. As a rule, it has a sufficiently large diameter
14 such that even in the presence of coffee beans, any beans in
15 the opening could readily be pressed to the side. The
16 pivoting between the closure element and the particular
17 output opening of a compartment can readily take place due
18 to the large lever. In particular, the possibility exists
19 of rotating the coffee bean container with both hands.

20 Only a minimal width movement gap is formed between the
21 closure element and the particular output opening of the
22 compartments of the coffee bean container. The inner width
23 of the gap is markedly less than the average diameter of a
24 coffee bean.

25 The closure element can be developed in the manner of a
26 disk covering the upper input opening of the shaft of the
27 grinding mill. In this case the coffee bean container does
28 not include a guide cone, but rather the openings of the
29 compartments are placed directly into the bottom of the
30 coffee bean container.

1 However, another embodiment provides that the coffee
2 bean container includes a guide element, for example a guide
3 cone, for the supply of the coffee beans into the output
4 shaft. In this case the closure element is adapted to the
5 bottom-side contour of the guide element and is structured,
6 for example in the form of a downwardly open cup.

7 Usefully the closure element is detachably held
8 torsion-tight on the grinding mill so that the grinding mill
9 is accessible at the top after the removal of the coffee
10 bean container and the closure element. An embodiment in
11 which the grinding mill comprises an upper shoulder on which
12 the closure element rests is useful. The closure element
13 can carry a radially projecting toe which engages a
14 corresponding recess of the housing of the grinding mill to
15 ensure a rotational decoupling from a rotational movement of
16 the coffee bean container disposed above the grinding mill.
17 The coffee bean container has at the bottom side an
18 encircling collar encompassing the output shaft, which the
19 housing of the grinding mill engages.

20 An automatic coffee maker equipped with such a coffee
21 grinder consequently can store different coffee varieties.
22 The coffee bean container of such an automatic coffee maker
23 can be moved to the grinding mill in different rotational
24 positions. It can also be provided that in one position
25 already ground coffee powder can be filled into the brewing
26 chamber of the automatic coffee maker through a lateral
27 supply shaft past the grinding mill.

28 The compartmentalization of the coffee bean container
29 can be realized through detachable walls, which can be set
30 into corresponding grooves of the coffee bean container. In
31 such an embodiment it is possible to fill the coffee grinder

1 with only one single coffee bean variety when the
2 partitioning walls are removed.

4 BRIEF DESCRIPTION OF THE DRAWINGS

5 Fig. 1 is a schematic view of an automatic coffee maker with
6 an integrated coffee grinder.

7
8 Fig. 2 is a sectional view through the coffee grinder of
9 Figure 1 in the region of the lower termination of the
10 coffee bean container in a first position.

11
12 Fig. 3 is the configuration of Figure 2 in a further
13 position of the coffee bean container relative to the
14 grinding mill.

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16 Before explaining the disclosed embodiment of the
17 present invention in detail, it is to be understood that the
18 invention is not limited in its application to the details
19 of the particular arrangement shown, since the invention is
20 capable of other embodiments. Also, the terminology used
21 herein is for the purpose of description and not of
22 limitation.

24 DETAILED DESCRIPTION OF THE DRAWINGS

25 Referring to Fig. 1 a fully automatic coffee maker 1 is
26 shown with two visible coffee outlets 2, 3 and a steam tube
27 4, with a steam nozzle 5 at the free. The housing 6 of the
28 automatic coffee maker includes an operating panel 8 set
29 into a recessed seating 7. The operating panel 8 comprises
30 several buttons T as electric switches, with which the ,
31 different functions of the automatic coffee maker 1 can be

1 initiated. Several LEDs L serve as control display means
2 for indicating that a specific button T has been actuated or
3 as a selection indicator, if several different functions can
4 be executed with one button T, or for indicating error
5 functions.

6 In the housing 6 of the automatic coffee maker 1 has a
7 grinding mill for grinding coffee beans. A coffee bean
8 container 9 is associated with the automatic coffee maker 1
9 for the storage of coffee beans. The coffee bean container
10 9 is connected to the housing 6 of the automatic coffee
11 maker 1 by a coupling ring. The coffee bean container 9 is
12 placed onto a top-side opening of housing 6, beneath which
13 the grinding mill 11 is positioned.

14 Shown partially sectioned in Figure 2, the automatic
15 coffee maker 1 has a coffee grinder 11 formed of the coffee
16 bean container 9 and a grinding mill 10. The coffee bean
17 container 9 is divided into two compartments 13, 14 by a
18 partitioning wall 12, so that in the coffee bean container 9
19 can store two different coffee bean varieties. A guide cone
20 15 is located in the lower region of the coffee bean
21 container 9. The guide cone 15 is braced on the bottom 16
22 of the coffee bean container 9 by several walls S. Between
23 the walls S of the guide cone 15 are several output
24 openings. Two output openings 17, 18 are shown in Figure 2
25 and Figure 3. The disposition of the walls S and the output
26 openings 17, 18 are formed so that the output opening 17, 18
27 terminates either in compartment 13 or compartment 14.

28 The bottom 16 of the coffee bean container 9 has a
29 downwardly projecting encircling collar 19. The collar 19
30 and the walls S form an output shaft 20. The grinding mill
31 10 with its housing 21 engages the output shaft 20. The

1 grinding mill 21 is fixedly mounted in the automatic coffee
2 maker 1.

3 Associated with the grinding mill 10 is a closure
4 element 22, whose formation corresponds to the contour of
5 the underside of the guide cone 15. The closure element 22
6 in approximation is a segment of a fourth of a sphere in the
7 depicted embodiment. The closure element 22 is set onto a
8 shoulder in the region of the input of the grinding mill 10
9 and is connected by a toe 23 torsion-tight with the grinding
10 mill 10.

11 The coffee bean container 9 is connected with the
12 housing 6 of the automatic coffee maker 1 through a bayonet
13 lock. Figure 2 shows two bayonet toes 24, 25 associated with
14 the coffee bean container 9 and one bayonet groove 26
15 provided as a part of the housing 6. As is evident in
16 Figure 2, the coffee bean container 9 is braced at the
17 underside on the housing 6 of the coffee bean container.
18 The coffee bean container 9 is rotatable about its vertical
19 axis relative to the grinding mill 10 and the remaining
20 components of the automatic coffee maker 9.

21 In the position of the coffee bean container 9 relative
22 to the grinding mill 10 shown in Figure 2, the output
23 opening 17 is open. In this position the coffee beans in
24 compartment 14 flow through the input of the grinding mill
25 10, as is indicated in Figure 2 by the arrow symbolizing the
26 flow of the coffee beans. Coffee beans contained in
27 compartment 13 of the coffee bean container 9 cannot enter
28 into the output shaft 20, since the output opening 18 is
29 closed by closure element 22.

30 However, the coffee beans in compartment 13 can be
31 introduced into the output shaft 20 and supplied to the

1 grinding mill 10 if the coffee bean container is rotated by
2 180° into the other position. This is shown in Figure 3.
3 Since the closure element 22 is rotationally decoupled with
4 respect to the rotational movement of the coffee bean
5 container 9, it remains in its original position. The
6 output opening 18 of compartment 13 subsequently assumes the
7 position in which output opening 17 had been disposed.
8 Consequently, now coffee can be brewed with the automatic
9 coffee maker 1 using the coffee beans contained in
10 compartment 13 of the coffee bean container 9 and which had
11 been introduced via the output opening 18 of compartment 13
12 into the output shaft 20 and been supplied to the grinding
13 mill 10.

14 The front side 27 delimiting the open side of the
15 closure element 22 is usefully beveled and specifically
16 toward the space encompassed by the closure element 22.

17 The description of the invention encompasses both a
18 coffee grinder with simple means for the selection of
19 different coffee varieties and an automatic coffee maker
20 with such coffee grinder. The coffee bean container of such
21 a coffee grinder can also comprise more than two
22 compartments.

23 The different positions of the coffee bean container
24 with respect to the grinding mill are usefully indicated
25 haptically, for example by catching positions in order to
26 indicate in this way when a user has reached a particular
27 position. The coffee grinder can, in principle, be
28 conceptualized such that a position change of the coffee
29 bean container is detected at the side of the device, and
30 that, after a change-over has occurred, the grinding mill is
31 switched on for a short time in order to remove the

1 remaining beans of the previously selected coffee variety
2 from the grinding mill. The coffee meal produced during the
3 grinding of these residual beans is usefully supplied to a
4 separate container. When using such a coffee grinder as
5 part of an automatic coffee maker, this coffee meal can be
6 transferred into the refuse container for coffee grounds.
7 Although the present invention has been described with
8 reference to the disclosed embodiments, numerous
9 modifications and variations can be made and still the
10 result will come within the scope of the invention. No
11 limitation with respect to the specific embodiments
12 disclosed herein is intended or should be inferred. Each
13 apparatus embodiment described herein has numerous
14 equivalents.
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List of Reference Symbols

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4	1	Coffee maker	20	17	Output opening
5	2	Coffee outlet	21	18	Output opening
6	3	coffee outlet	22	19	Collar
7	4	Steam tube	23	20	Output shaft
8	5	Steam nozzle	24	21	Housing
9	6	Housing	25	22	Closure element
10	7	Recessed seating	26	23	Toe
11	8	Operating panel	27	24	Bayonet toe
12	9	Coffee bean container	28	25	Bayonet toe
13	10	Grinding mill	29	26	Bayonet groove
14	11	Coffee grinder	30	27	Front side
15	12	Partitioning wall	31		
16	13	Compartment	32	L	LED
17	14	Compartment	33	S	Wall
18	15	Guide cone	34	T	Button
19	16	Bottom	35		

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